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A TRANSACTION COST ECONOMICS VIEW OF DOD OUTSOURCING

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A Transaction Cost Economics View of DoD Outsourcing

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Abstract

Many goods and services required for government operations can be provided through commercial markets. Public officials, therefore, face a number of "make-or-buy" decisions. Transactions Cost Economics (TCE) offers a useful foundation for characterizing "make-or-buy" decisions, which this paper explores. Our dual objective is to synthesize key principles of TCE and to apply TCE to federal outsourcing. One especially useful insight is that transaction costs vary widely, and depend in known ways upon the attributes of the outsourcing action. This means, among other things, that one size should not fit all in outsourcing decision processes.

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Introduction

1. INTRODUCTION

In launching the reinventing government movement, Osborne and Gaebler (1992) renewed interest in reviewing government support activities to assess whether savings might exist from outsourcing more government work to the private sector. At the federal level, these assessments have taken the form of public-private competitions governed by OMB Circular A-76, published by the Office of Management and Budget (OMB, 2003).

A key insight of Transactions Cost Economics (TCE) is that a firm's boundaries are principally defined by its "make-or-buy" decisions (Coase, 1937). Similarly, the boundaries of the US Military are increasingly shaped by public-private (make-or-buy) competitions. Another key insight of TCE is that while production-cost savings are necessary to warrant outsourcing, they are not sufficient. Besides the usual quality, schedule and security concerns,[2] the risk of opportunistic behavior and the often considerable costs of managing external transactions need to be factored into the calculations.

The Department of Defense uses the term "Competitive Sourcing" to describe its public-private competitions.[3] A recent study by Gansler & Lucyshyn (2004) reveals that since 1995, competitive sourcing initiatives have involved more than 65,000 Department of Defense (DoD) civilian positions and yielded an average estimated savings of 44 percent of baseline costs, for a cumulative total of $11.2 billion dollars. Although contractors won a slight majority of these competitions (56 percent), the trend appears to favor public providers. By 2003, in-house bidders won nearly twice as many competitions as contractors. [4]

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[2] Enterprise operations involve information, some of which is proprietary, classified or otherwise sensitive. Close coordination with an outside supplier of goods or services involves the exchange of information, some of which is sensitive. Passing this information outside corporate boundaries accordingly decreases ability to control its dissemination. Thus, involving outside suppliers involves risks of compromising corporate (or government) secrets.

[3] Table 2 lists the top 15 items outsourced by the Pentagon from 1998 to 2003.

[4] The number of bids won by the in-house "most efficient organization" in many cases reflects costs that do not properly account for capital expenses—costs that are generally sunk, and which public-sector organizations have difficulty estimating. However, the A-76 process inserts an aspect of competition in providing the services in question; therefore, these public-private competitions can, and often do, result in savings to the government regardless of who wins. In testimony to the Congress in 2000, the General Accounting Office (GAO) reported Department of Defense estimates that 286 of the A-76 competitions completed since 1995—involving some 10,660 government positions—may have generated savings of $290 million in fiscal year 1999 (General Accounting Office, 2000). Part of these estimated cost savings occurred even when the government supplier retained control. Although difficult to calculate, it is likely even more savings were generated from newly contestable internal government markets—or the threat of entry—introduced by A-76 competitions in federal operations (Baumol, et al., 1982). Notably absent from these calculations, however, is an explicit account of the costs of conducting the competitions, and the transaction costs associated with implementing newly redesigned programs and the burden of ongoing contract administration—including costs of negotiating, writing, monitoring and enforcing federal contracts. This is a central theme that is addressed in the rest of the paper.

Along with successive waves of defense acquisition reforms, the issue of competitive sourcing has become a central fact-of-life. What fraction of the defense budget should government "make" (or in-source) in the public sector, and what fraction should it "buy" (or out-source) in private markets?[5] TCE offers a powerful analytical framework to help answer government's make-or-buy decisions, and in the case of outsourcing, to guide the type of contract.

TCE views organizations as a web of contractual relationships. Each relationship—the acquisition of an input, employment of a worker, the exchange of a product or service between supplier and customer—is a transaction. Understanding the basic characteristics of a transaction turns out to be the key to answering the "make-or-buy" decision.[6]

Two costs typically drive an organization's "make-or-buy" decisions: production costs and transaction costs. Conventional economic analysis focuses on production costs (economies of scale and scope, learning curves, etc.). The "buy" (or outsourcing) option is routinely prescribed whenever external production costs are substantially lower than internal production costs. Although recognizing the importance of production cost savings in the decision to outsource, TCE emphasizes another key factor: transaction costs (e.g., search and information costs, bargaining, decision and contracting costs, and monitoring and enforcement costs).[7] As Oliver Williamson—regarded as the father of TCE—rhetorically queries:

> What […] does zero transaction costs mean? All of the relevant information is freely available and can be costlessly processed by the participants? Comprehensive contracting is feasible? Actions can be costlessly monitored? Decisions will always be made in a benign way? (1999, p.316)

Some transaction costs typically faced by organizations dealing with outside suppliers are the costs associated with: source selection, periodic competition and renegotiation, contract management, and measuring and monitoring performance.

Coase (1937) was among the first to discuss how, since market transactions are costly to manage, "by forming an [internal support] organization and allowing some authority to direct resources [internally], certain [transaction] costs are saved" (p. 392). However, the cure—vertically integrating transactions inside the firm (or "make")—can be worse than the disease.

Examples of transaction costs that occur inside an organization include the costs of managing and monitoring employees and purchasing inputs. In fact, supplanting the market

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[5] Note that if bureaucratic power increases with the size of a bureau (as suggested by Mueller, 1987), then Niskanen's (1968) theory of budget-maximizing bureaucracy lends support to Wagner's (1976) prediction that the public sector share of national income will tend to rise over time—in this example there would appear to be a built-in bias favoring the "make" decision.

[6] Non-core business transactions commonly outsourced by private companies include: IT services, back-office accounting, benefits management, customer service, engineering design, help-desk management and operations, human resource management, legal services, facilities management, physical and electronic security, printing services, mailroom management and operations, payroll services, some procurement activities, secretarial and administrative support, internal audit and accounting, temporary staffing, transportation, distribution and shipping services, and warehouse management and operation.

[7] Transaction costs include costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts.

price mechanism requires internal coordination that involves some risks. These include the risk of internal opportunistic behavior (costly lobbying for higher salaries or budget increases), multi-tasking ("what gets measured gets done"), and sub-optimization (success achieved at lower levels at the expense of the overall welfare of the organization).

The TCE literature evaluates both internal and external transactions to help guide make-or-buy decisions. While the literature focuses almost exclusively on business decisions, the goal of this paper is to integrate and apply key principles of TCE to guide government decisions.

Government make-or-buy decisions mostly take the form of public-private competitions, or "competitive sourcing." The next section offers an overview of competitive sourcing. Section 3 provides a brief review and synthesis of the TCE literature. Section 4 discusses new insights generated by TCE that can help guide government's competitive-sourcing decisions, as well as its choice of contract type. Section 5 offers a useful table that summarizes our results along with a few policy recommendations.

2. COMPETITIVE SOURCING

Every organization has to decide how much of its production and support activities will be conducted within the boundaries of the organization ("make"), and how much will be performed outside the organization ("buy").

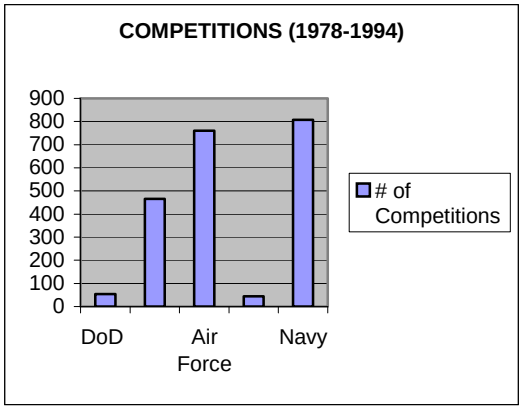
Table 1 illustrates the outcome of over two thousand competitive-sourcing competitions conducted by the US Military over the period 1978-1994 (Trunkey, et al., 1996). The competitions resulted in nearly an even split between continued public provision and decisions to outsource.

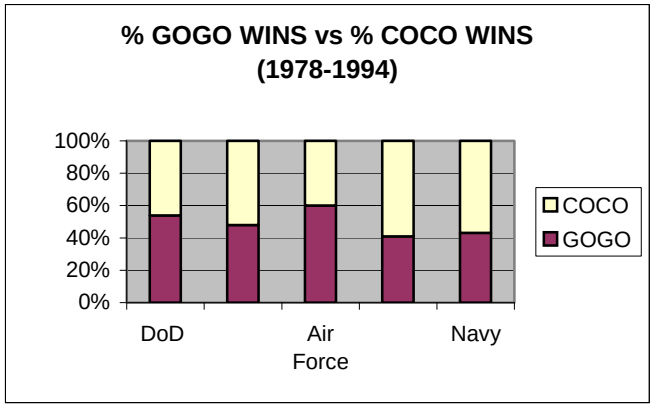
TABLE 1. Public-Private A-76 Competitions in the Military

GOGO=Government Owned Government Operated
COCO=Contractor Owned Contractor Operated

Trunkey, et al., 1996

	COMPS	% GOGO WINS	% COCO WINS
DoD	54	54	46
Army	466	48	52
Air Force	760	60	40
Marines	44	41	59
Navy	807	43	57
		49	51





The typical competitive sourcing process can be broken down into six steps: 1) Identify Functions to be Competed; 2) Evaluate the Functions to be Competed (define baseline costs and performance); 3) Prepare a Comprehensive Request for Proposals (RFP); 4) Identify Potential Vendors (perform due diligence); 5) Select a Vendor (or multiple vendors); 6) Negotiate a Contract (including price and performance targets and incentives for improvement).

The first two steps involve defining the product or service; the next two involve evaluating alternative sources of supply (public and private); and the last two focus on choosing a provider. TCE emphasizes a final step, occasionally overlooked in the make-or-buy decision process: the costs of managing the contract, including evaluating and monitoring performance.

It always helps to look forward and reason back. If it appears managing the contract (including future competitions and/or renegotiations), and evaluating and monitoring performance are likely to be costly (in terms of dollars or disputes), then this expense should be taken into account in the original make-or-buy decision, as well as in negotiating the contract type.

OMB Circular A-76 governs the military's competitive-sourcing initiatives. It requires the classification of all activities into two categories: "commercial" or "inherently governmental." Attachment A (Inventory Process) guides the selection of government activities deemed "commercial" in nature. Commercial activities are those "subject to the forces of competition." Attachment B (Public-Private Competition) specifies the competitive-sourcing process.[8] Finally, Attachment C (Calculating Public-Private Competition Costs) specifies the rules and procedures for cost calculations.

The A-76 Competitive Sourcing Process in Brief

The competitive sourcing process governed by OMB Circular A-76 consists of several stages summarized below:

a) Create an inventory of agency activities, classify them as commercial or governmental, and determine how to bundle the competition(s).

b) Announce intention to undertake a competitive sourcing study, both to the affected government work force and to potential commercial sources.

c) Develop and announce the terms of the competition to include expectations (Performance Work Statement, PWS), various study teams, and a quality-assurance plan (QASP). Specify the criteria for source selection.

d) Issue a solicitation, or Request for Proposal (RFP), seeking bids from the commercial sector.

e) Develop the in-house alternative. This consists of a management plan, cost estimate, performance plan, and transition plan from the current organization to the "Most Efficient Organization" (MEO). This alternative is automatically one of the finalists.

[8] Actually, at least two competition processes—the streamlined process is discussed in Attachment B, Section C, and the standard process in Section D.

f) Compare the public (in-source) alternative with qualifying private (out-source) proposals both in terms of cost and in meeting the terms of the PWS.

g) Award the contract (issuing agreement) after appeal if applicable. The decision to out-source requires that the private alternative offer cost savings of at least 10 percent or $10 million below the MEO, whichever is less.

h) Transition to the in-house organization (if applicable) or to the winning commercial source.

i) Conduct post-award contract administration (if applicable) and quality assurance.

The concept of competitive sourcing takes many of its lessons from the private sector. There are a number of very good reasons for private firms to consider outsourcing, among them are: production costs, "agency" costs and "influence" costs."

A. Production Costs

Firms specialize in certain goods and services because they have a competitive (or comparative) advantage at performing them. As they specialize, firms increase their proficiency (work down their learning curve) and continuously improve. Within a competitive market, firms earn rewards for those improvements, and are motivated to operate at the most efficient scale.[9]

Competitive markets provide powerful incentives for participating firms to discover and produce product mixes that minimize costs. That is, firms in a competitive market are also motivated to fully realize economies of scope.[10] This can boost profits and fend off rivals. The more competitive the market, the more firms are motivated to pass on savings to customers. Prices charged in competitive markets are close to marginal costs, and are constantly driven down due to competition, as well as economies of scale, scope and learning.[11]

A critical task that faces every organization is to identify its core competencies, those activities in which they have a competitive (or comparative) advantage. Internal production of non-core competencies is unlikely to be efficient when compared to what is available in the market. In general, production rates are too small to fully realize available economies of scale. Only by happy coincidence would the organization's demand for goods of a particular type correspond with the most efficient scale or scope of production. Finally, in-house production

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[9] Firms in perfectly competitive markets will move toward the lowest point of their long-run average cost curve in pursuit of profit. That is, these firms can be expected to take full advantage of economies of scale.

[10] If two products can be produced together more cheaply than they can be produced separately, then there are economies of scope. Opportunities for economies of scale and scope pretty much define the firm's natural "horizontal boundaries."

[11] The difference between marginal cost and price varies inversely with the price elasticity of demand for the vendor's product. An inherent feature of competitive markets is the availability of a large number of close substitutes for any firm's product. Therefore, price elasticities of demand are quite high, and the difference between marginal cost and price are correspondingly quite small. (In the limiting case of perfect competition, price elasticity of demand for any firm's product is infinite, and price is equal to marginal cost.)

may only be required and/or operate intermittently, limiting the opportunities to exploit further economies from learning-by-doing.[12]

B. "Agency" and "Influence" Costs

In-house production is synonymous with "sole source." With captive customers, a monopoly government activity has little incentive to cut costs or improve product quality. The "agency" problem involves finding creative (low-cost) mechanisms that align incentives to induce an activity to perform diligently and in ways consistent with the overall goals and objectives of the organization.[13]

Management oversight is one such mechanism, but it carries a cost. Oversight requires time and effort and, therefore, a commitment of resources. Moreover, it is often associated with costly lobbying efforts to influence decisions that favor one part of the organization at the expense of others. Influence activities can increase costs and undermine the effectiveness of an organization, leading to sub-optimization. Outsourcing part of the production chain may avoid some agency and influence costs that are part of internal transaction costs.

3. TRANSACTION COST ECONOMICS (TCE)

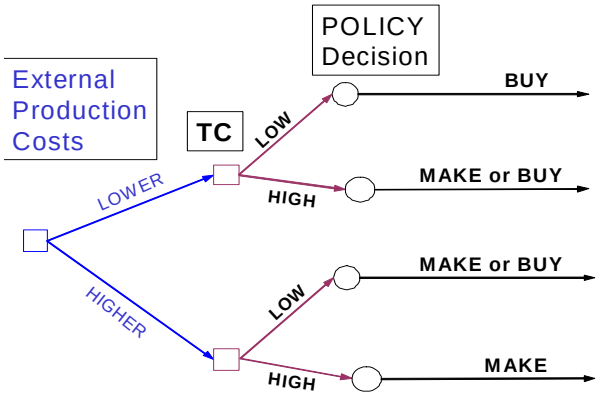
Organizations tend to specialize in those "core" activities in which they have a comparative advantage, and "transact" with outside suppliers (or out-source) to acquire other goods and services. A key contribution of TCE is to introduce the nontrivial costs of managing these transactions into the "make-or-buy" decision. The question is whether resource inputs or intermediate activities should be produced internally (vertically integrated), or should be "out-sourced"—i.e., purchased in spot markets or contracted through suppliers. The two costs that drive the "make-or-buy" decision in TCE are production costs and transaction costs. Answers to the make-or-buy decision ultimately define the boundaries of an organization.

Figure 1 offers a simple "make-or-buy decision tree." Here the prescription to in-source (make) or out-source (buy) accounts for both production and transaction costs. For instance, if the organization is conducting an activity where there exists "LOWER" *external* production costs, and out-sourcing would involve "LOW" transaction costs (TC), then the policy decision is to "BUY" (or out-source). The higher the expected transaction costs (to manage the supply relationship), the lower external production cost (or the greater production cost savings) must be to support the decision to "BUY" or out-source.

[12] With extended production runs, firms become more proficient with the processes involved, and, therefore, able to achieve lower cost. As Besanko (2000, p. 91) puts it, "cost advantages […] flow from accumulating experience and know-how."

[13] This is frequently referred to as the "principal-agent problem." Methods to address it are sometimes grouped as "agency theory" (Kreps, 1990; Besanko, 2000).

Figure 1. Competitive Sourcing Decision Tree



In TCE, the decision to outsource depends on an expectation of positive net savings, where: Net Savings = Production Cost Savings + Transaction Cost Savings. In Figure 1, if *external production costs* are "HIGHER" than *internal production costs*, and external *transaction costs* are also "HIGH," then the policy decision is to "MAKE" (or in-source). However, it is possible for an internal production cost advantage to be offset by sufficiently high internal transaction costs. In this case, if "HIGHER" external production costs can be offset by sufficiently "LOW" external transaction costs, it might still pay to "BUY" (or out-source).[14] Higher external production costs could still look like a bargain to an organization if that organization suffers from sufficiently high internal *transaction costs* to conduct that activity.

Two key components of the "make-or-buy" decision are highlighted in TCE: coordination and motivation. The issue of coordination arises from the economic opportunity for specialization and exchange. Traditional economic analysis focuses on *productive* (cooperative) exchanges between parties that specialize in different activities. These transactions often generate substantial gains for the parties involved. The gain or "surplus" generated through specialization and exchange can take the form of more and better output, delivered more quickly, and with fewer resources. TCE recognizes these potential gains, but also acknowledges the dark side of the coordination problem—motivation.

TCE predicts parties involved in a transaction may benefit from cooperation and, thereby, generate a surplus. However, since they are assumed to be self-interested and opportunistic, they will not necessarily have the motivation to do so—particularly when specific assets[15] are involved and information is imperfect (incomplete or uncertain) and asymmetric.

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[14] At first glance, introducing transaction costs into the mix suggests lower external production costs (or positive production cost savings) are necessary but no longer sufficient to justify outsourcing. Now we can see that production cost savings may not even be necessary to justify outsourcing!

[15] Asset specificity comes in a variety of flavors: human, location, physical, etc. These are assets that generate high returns in the context of a specific transaction, but offer very little value outside that relationship.

The interaction of opportunism with imperfect and asymmetric information raises the possibility of unproductive bargaining/influence or rent-seeking activities.[16] The ultimate outcome—a balance of productive efforts and unproductive bargaining—depends on the characteristics of the transaction and the incentive structures that govern the parties involved.[17]

In TCE, the successful resolution of resource-allocation problems rests on designing mechanisms (markets, contracts, organizations, etc.) that allow opportunistic individuals to overcome their collective-action problems in pursuit of gains from exchange (Williamson & Masten, 1999).

A. Coordination Difficulties

Efficient production requires extensive synchronization of a number of complex activities. This is especially true in the practice of "lean" production, featuring "just-in-time" deliveries with attendant reduction in inventory costs. The more complex the transaction, the more difficult (costly) coordination with an outside enterprise will be. There may be more commonality of objectives between two divisions of the same enterprise than with an outside firm. Also, any disagreements about deliveries, schedules and similar issues are generally settled more quickly and in ways more suitable to the enterprise if it has authority over all parties. (One way to have that authority is to vertically integrate and produce everything in-house.)

B. Motivation Difficulties

Out-sourcing important parts of one's business means depending on the chosen supplier. This dependence may be of trivial importance. For example, the purchase of paper clips involves a one-time transaction for office supplies.[18] If a paper-clip source proves unsatisfactory for some reason, it's readily possible to find another supplier.

On the other hand, outsourcing a major management information system involves a long-term, highly-complex relationship. During the process of executing the agreement, the supplier acquires expertise in the specific system, which confers a form of human asset specificity.

At some point, the relationship is transformed from a customer operating in a competitive marketplace with a number of suppliers to a relationship between a single buyer and single seller. At this point, close-in bilateral bargaining replaces the impersonal (arms-length) arrangements of the competitive marketplace.

Outsourcing relationships of this type entail a *basic transformation* of the supplier from competitive bidder (prior to source selection) to sole supplier (after source selection). Having one supplier with unique expertise (human and physical asset specificity) confers monopoly

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[16] The concept of unproductive bargaining and rent-seeking is usually attributed to Tullock (1971), Krueger (1974), and Bhagwati (1980) (also Tullock, 1993). A key insight of this literature is that costly bilateral bargaining by two parties for a bigger share of the surplus they jointly create can dissipate or even eliminate that surplus (Tullock, 1971).

[17] There are other factors as well. For example, Wolff and Reed (2000) find significant evidence that, *inter alia*, the nature of, and access to, assets in a joint venture are important in predicting the balance of positive sum (productive) and zero sum (unproductive) outcomes for the participants.

[18] Actually, a series of one-time purchases of paper clips.

power, especially if there are no close substitutes for this particular contractor's services. Accordingly, the customer is now vulnerable to "opportunistic behavior"[19] from the contractor. Unforeseen circumstances may prompt large charges for special services for which there are no readily available substitutes.[20] The supplier may, in fact, exploit its power in the relationship to renegotiate the basic agreement to the buyer's disadvantage, threatening to dissolve the agreement. The TCE literature refers to this as a "hold-up."[21]

Whereas out-sourcing opens possibilities of production cost savings, it exposes the organization to the costs of managing the out-sourcing relationship and to the risks of bad (opportunistic) behavior on the part of out-sourcing partners.

C. Relationship Specific Investments (Investments in Transaction-Specific Assets)

Relation-specific investments can improve the efficiency of some transactions. Investments in specific assets can take on a variety of characteristics, including:

Site Specificity: e.g., investments that locate the supplier's production facility close to its customer;

Physical-Asset Specificity: e.g., specialized investments by the supplier (in plant and/or equipment tailored to the customer's needs) that are much less profitable if shifted to serve other customers;

Human-Asset Specificity: e.g., specialized investments by the supplier's work force (in skills and knowledge) oriented toward the primary customer's needs that are less valuable in transactions with other customers.

Dedicated-Asset specificity: e.g., investments in excess capacity which provide a contingency in the event of a surge in demand.

Relation-specific investments increase risks to both parties. Having made specialized investments, the supplier becomes the most efficient provider, and thus can potentially raise its price—and still remain the least-cost supplier. At the same time, if the supplier makes specific investments in assets that are only valuable in the context of its relationship with a specific buyer, then this makes it more vulnerable to that customer. If parties to the transaction behave opportunistically, they can capture the value of investments made by the other. For example, either party can "hold up" the other by threatening to change the terms of the relationship. So, whereas relation-specific investments increase the total gains from the outsourcing arrangement, they also increase the risks of opportunistic behavior in which either party can hold up the other. The danger is that if neither party feels like it can recover the full costs of its

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[19] Williamson (1996) defines "opportunism" as "self-interest seeking with guile."

[20] Besanko (2000) and others have labeled the transition from one prospective buyer and many sellers to one buyer and one seller, from competitive market to a one-on-one relationship as the "fundamental transformation." This transformation occurs, at least to a certain extent, after the completion of every source-selection process.

[21] An even worse case is the possibility that a holdup might be unilaterally executed. According to Besanko (2000), "a holdup problem arises when a party in a contractual arrangement exploits the other party's vulnerability due to relationship-specific assets."

investment in the relationship/transaction (say through a continuation or renewal of the contract), then those efficiency-generating investments will not be made, possibly resulting in higher costs, schedule delays and lower quality.[22] The Appendix provides a notional example illustrating the vulnerabilities of both parties in an outsourcing relationship featuring a high degree of asset specificity.

D. Resolving the Hold-Up Problem

While corporate partnerships and relation-specific investments increase the benefits to both parties, they make both vulnerable to opportunistic behavior, or a holdup, by the other party. Vulnerability to these events can be significantly decreased through well-crafted contracts. However, contracting (a) involves expenditure of resources, and (b) cannot completely eliminate risks associated with opportunistic behavior from partners.[23]

The process of contracting includes drafting the relevant documents, negotiating a version of the contract that is signed, taking actions to enforce that contract, and renegotiating when needed. These tasks entail, at minimum, the services of skilled people who develop local knowledge of the specific business relationship. There may also be costs associated with litigation, to include both direct (e.g., monetary) and indirect (e.g., time delay) components. Furthermore, the basic contract may well need considerable administrative and management attention throughout its life, even if full-scale renegotiation is not undertaken. Accomplishing these tasks satisfactorily involves expenditure of resources and management attention. These "transactions" costs can negate a significant portion of the savings involved with outsourced production.

That the future is not amenable to perfect prediction is a well-known fact of life. The obvious implication is that a contract cannot foresee all possible contingencies throughout the period of its execution. That's true regardless of the skill of the legal staff and the expertise of the contracting personnel.[24] In some cases, this is not worrisome, as, say, for the one-time purchase of paper clips. However, in long-term, complex outsourcing relationships, this may prove very costly during the execution of the contract. This problem is further complicated when there is asymmetric information.

Even the enforcement of clearly written contracts may be problematic. It may be difficult to specify, measure, and demonstrate material breach of contract. Furthermore, it is impossible to foresee all situations in which a contracting party might wish to demonstrate that breach.

Because contracts cannot completely hedge against risks of opportunistic behavior, other risk-reduction measures may prove advantageous. The organization out-sourcing an

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[22] The result of opportunistic behavior may be adverse selection, ex ante choice of an inferior option (e.g., production technology), or moral hazard—increasing risk that if a relationship-specific investment is made, that the other party will exploit the terms of the contract to "hold them up." For example, changes in specifications are frequently used by contractors as an excuse for raising prices and profits under government contracts, especially when specific investments by the contractor create a barrier to the entry of other competitors.

[23] Costs associated with contracting and the holdup risks remaining are major components of "transactions costs."

[24] This is a manifestation of what's sometimes called "bounded rationality."

activity may retain some in-house (perhaps standby) capability to provide the good or service in question.[25] This, and similar measures, could enhance bargaining position in the event of renegotiation or contract-enforcement actions.

Changing the ownership of assets associated with relation-specific investments is another strategy that can reduce the scope for opportunistic behavior. For example, this may take the form of government-furnished equipment in some federal transactions or GOCO ("Government-Owned, Contractor-Operated"). However, such hedging measures also entail costs, and can likewise dissipate the potential gains from outsourcing.

The conventional wisdom in the transaction costs literature is that the decision to out-source should not be taken lightly. While the potential production-cost savings may well be tempting, there are associated costs and risks, albeit less obvious. They are less important (and might be negligible) for simple, one-time transactions where alternate suppliers are readily available. They can be critically important when the out-sourcing arrangement is such that there is only one supplier readily available in a complex and lengthy relationship.

Hence, the decision to out-source must weigh production cost savings against the costs and risks associated with a critical source of supply being outside the firm's control. Those are generally referred to as the transaction costs of the out-sourcing relationship. Thus, out-sourcing is preferred only if the total costs are less than the costs of production with the firm's (in-house, organic) assets. That is, a firm should out-source only if:

Net Savings = Production Cost Savings + Transaction Cost Savings > 0.

4. IMPLICATIONS OF TCE FOR COMPETITIVE SOURCING

A fundamental insight of TCE is the importance of uncovering both production and transaction costs associated with the "make-or-buy" decision. The policies and procedures that govern competitive sourcing appear in OMB Circular A-76. A summary of the steps involved in conducting these public-private competitions appears in Table 1.[26] TCE reveals key characteristics of transactions that make them "good" or more "challenging" candidates for out-sourcing.

A. "Good" Candidates for Outsourcing

If a transaction requires little in the way of specific assets (no hold-up problem), and involves a product or service that is: a) standard and well-defined (IFB), b) easy to measure (limited complexity and mild information asymmetry), c) routinely used (recurring/frequent purchases), d) not subject to change (limited demand uncertainty), and e) is offered by competing suppliers, then there is little room for negotiation (price and performance are market-driven), and the marginal benefit of unproductive bargaining (or opportunistic behavior) is nearly zero. With little room for bargaining over such routine and uncomplicated transactions, substantial production and transaction cost savings can be expected from out-sourcing, or from purchasing directly in spot markets (say over the Internet). Moreover, since administrative, incentive, and enforcement costs tend to be low for standard goods and services produced in

[25] This is sometimes called "tapered integration" and is related to the concept of "contestable markets."

[26] The results outlined in the next two sections were generated by a simple mathematical game theory model of out-sourcing that incorporates key principles of TCE (See Melese, F. & Franck, R., 2003).

competitive markets, the marginal cost of engaging in the transaction is small, and the marginal cost of unproductive effort is high. This encourages greater effort and investment in the transaction and, ceteris paribus, tends to generate a larger surplus, S, or a higher return to out-sourcing.

In general, the less complex and uncertain a transaction, the easier it is to write an explicit contract that covers all relevant contingencies. Moreover, the lower the administrative and enforcement costs of that contract, the higher the expected marginal cost of ex-post bargaining or opportunistic behavior, and the lower the expected return from that activity. This reduces the scope for optimal ex-post bargaining, thus lowering transaction costs associated with outsourcing. The favorable characteristics of these so-called "good" candidates tend to encourage greater productive effort that in turn contributes to a larger surplus enjoyed by both parties, increasing the returns from out-sourcing.

B. More "Challenging" Candidates for Out-sourcing

More challenging candidates include transactions that involve a non-standard (or highly differentiated) product or service, and thus take place in a bilateral, contractual setting. In this case, assuming no specific assets are required, the results (bargaining or opportunistic behavior, effort or investment in the relationship, and surplus generated) depend on the degree of contractual ambiguity governing the transaction, as well as on any administrative and enforcement costs involved. However, as complexity, uncertainty, and opportunism due to specific investments increase, so does the marginal benefit of bargaining or ex-post re-negotiation. This increased risk results in higher external transaction costs that need to be offset by more substantial production cost savings in order to justify out-sourcing.

Productive investment (or effort) involves two types of assets: general and specific. The greater the ratio of specific assets to total investments required in the relationship, the greater the risk of "hold-up." Moreover, as the threat of bilateral dependency increases, the more incomplete the contract becomes (and the lower the penalty for reneging or renegotiation), the marginal cost to each party of engaging in unproductive bargaining or influence activities becomes lower. In the face of incomplete contracting, the hold-up problem poses a hazard Williamson calls "maladaptation." The risk of maladaptation is captured here as an increase in the return to both parties in unproductive bargaining or influence activities. As the marginal return to bargaining increases and the marginal cost decreases, a greater amount of unproductive bargaining, and a lower productive effort or investment can be expected—which erodes the surplus that can be enjoyed by both parties to the transaction.

Any time ex-ante competitive bidding among suppliers is transformed into an ex-post, bilaterally dependent relationship, additional governance structures may be required to induce cooperative adaptation. The challenge is to write a contract with enough precision to encourage desired performance, but enough flexibility to allow productive adaptation (adjustments), as circumstances require. But in the case of complex transactions and uncertain outcomes, "bounded rationality" precludes comprehensive ex-ante contracting (contracts are inherently incomplete) which raises the possibility of gains from (unproductive) ex-post, opportunistic renegotiation (e.g., the "hold-up" problem).

Contracting, therefore, offers an imperfect solution to opportunism. Additional governance mechanisms (rules and regulations, GOCO, etc.) can help settle disputes and adapt to new conditions. Likewise, ex ante efforts are useful for screening reliability and reputation or to safeguard and protect transaction-specific investments. These structures can

include anything from agreements to share and verify cost and performance information through incentive contracts (e.g., sharing gains of continuous process improvement), to government ownership of facilities and tooling to reduce the potential for opportunism, to the careful crafting of dispute settlement mechanisms.

If such agreements turn out to be too costly to implement and enforce—or "maladaptation hazards" are too great—then out-sourcing can give way to in-sourcing, or vertical integration. When asset specificity, bounded rationality, and opportunism make contracting problems too difficult or costly, these problems can be relieved by internalizing transactions.

However, when transactions are integrated within an organization, transaction-cost calculations must also include internal costs of managing, monitoring, and motivating activities and personnel, with low-powered incentives. Some key challenges of internal production previously discussed include sub-optimization, strategic internal lobbying for resources, multitasking, and the difficulty of coordinating and monitoring the quality, quantity, cost, timeliness and improvement of goods and services. [27]

It is instructive to return to OMB Circular A-76 and examine the threshold cost-savings criteria required to declare a victor in public-private competitions. The results of our analysis suggest the one-size-fits-all threshold of greater than 10% estimated production cost savings before a federal activity is out-sourced should be reviewed. In the case of what we termed "good" candidates for out-sourcing, the threshold production savings specified in OMB A-76 can be reduced considerably, since external transaction costs tend to be low or negligible. In contrast, for the "more challenging" candidates, the 10 percent or $10 million threshold of production cost savings might need to be raised to account for the likelihood of substantial external transaction costs required to govern the ongoing relationship—including scope for encouraging productive effort and discouraging unproductive bargaining (hold-ups and renegotiation).

C. What It All Means in the Defense Sector

The key contribution of this paper is to apply lessons from TCE to develop new insights into public-private competitions. This effort leads to two important policy recommendations. First, different rules should apply to different transactions to declare a victor in public-private competitions. Second, if the private sector wins, then the optimum choice of outsourcing contract depends on certain key characteristics of the transaction.[28]

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[27] In the first interpretation of the model—an out-sourcing or external, bilateral, monopoly bargaining setting—we considered ex-post adaptation (bilateral negotiation) between parties to a transaction (based on various assumptions regarding the complexity, uncertainty, and degree of asset specificity involved in the transaction). In a second interpretation of the model—an in-sourcing or internal, bureaucratic (hierarchical) setting—productive and unproductive activities (monitoring and measurement, shirking, and rent-seeking, etc.) engaged in by a principal (the boss or internal customer) and agent (the worker or internal supplier) can be studied using the stylized game model developed earlier.

[28] These characteristics include: the extent of any relation-specific (site, human or physical) assets that might be required for the transaction, complexity (the degree of uncertainty about demand, quality, cost, etc.), frequency of the transaction, information (asymmetries), market structure, etc.

Transaction costs include all the costs of out-sourcing a product or service including: search, bargaining, contracting and enforcement costs. An organization can out-source in two ways: on the spot market or through short- or long-term contracts. The method chosen depends on some key characteristics of the transaction.

Spot-market ("off-the-shelf") purchases will minimize transaction costs if transactions involve buying standard inputs in competitive markets. Usually, these purchases require no relationship-specific investments in specific assets, so there is no hold-up problem. Transactions best governed by spot-market purchases typically involve a product or service that is: a) standard and well-defined, b) easy to measure (limited complexity, and mild information asymmetry and uncertainty regarding cost, quality and schedule), c) either occasionally or routinely used (although frequent and recurring purchases by other buyers occur in the marketplace), and d) is offered by multiple competing suppliers. In this case, spot-market purchases minimize transaction costs, and price and performance are driven by market forces, not through negotiations.

However, even in the case of standard products and services, if transactions involve specialized investments by either the buyer or the seller, there is a hold-up problem. This could manifest itself as under-investment in specific assets or opportunistic behavior once those investments are in place. Understanding this ex ante, TCE recommends the buyer and seller try to reduce the likelihood of a hold-up (or minimize transaction costs) by adopting a short- or long-term contract.

The four main contract types specified for out-sourcing under OMB A-76 are: Sealed bid firm-fix price (Fixed Price = FP), Cost sharing and Incentive Fee (Cost Plus = C+), and time and materials (TM). Table 2 details the types of out-sourcing contracts under which the top 10 military contractors operated over the period 1998-2003.

Table 2. The Top 15 items DoD Outsourced from 1998 to 2003

Category	***Cost ($bil)***
Research & Development	140.2
Aircraft & Airframe Structural Components	86.5
Professional, Administrative & Mgmt Support Services	73.6
Construction of Structures & Facilities	42.4
Equipment Maintenance, Repair & Rebuilding	42.4
Maintenance & Repair of Real Property	34.4
Data Processing & Telecom Services	33.0
Ships, Small Craft, Pontoons and Floating Devices	31.2
Communications and Detection Equipment	28.3
Medical Services	24.6

Fuels, Oils and Lubricants	24.5
Engines, Turbines and Components	23.3
Guided Missiles	22.8
Utilities, Food Service, Janitorial and Housekeeping	22.6
Transportation, Travel and Relocation Services	18.1

(Markison, 2004)

If the Performance Work Statement (PWS) describing the desired product, service or project can be specified precisely (IFB), and there are no transaction-specific assets involved, then FP-type contracts have the benefit of creating cost-reducing incentives that reward the buyer through ex-ante competition between potential suppliers. In this case, FP contracting increases contractor incentives to invest in cost reduction, and ex-ante competition can transfer these cost-savings directly to the buyer. Since there are few unresolved issues, little or no costly renegotiation occurs ex-post.

In contrast, if the Performance Work Statement (PWS) cannot be specified precisely (RFP) or there are significant specific assets involved in the transaction, then some surplus will be eroded by the threat of ex-post negotiation. This loss from bargaining activity is part of the cost of using a FP contract in this case. The more complex and uncertain the transaction, the less complete the PWS, the greater the cost in using FP, and the more attractive other contracting options become.

However, Bajari and Tadelis (1999) demonstrate that providing cost incentives in a contract is more likely than not to lead to disagreements, spoiled relationships and ex-post friction in interpreting the outcomes. In fact, avoiding these frictions and reducing the advantages of renegotiation can be accomplished by investing in a more complete PWS, and by adopting alternative mechanisms (reputation, GOCO, etc.) to reduce the return from opportunistic behavior.

TCE suggests that the degree of completeness of the PWS and the contract is an optimizing decision by both parties that reflects their trade-offs between an ex-ante investment in the PWS and contract design, and the potential ex-post cost of opportunistic renegotiation. Moreover, since the principal insight of TCE is that the choice of optimal governance structure depends on the characteristics of the transaction, the dual focus of any out-sourcing evaluation should be: a) to sort transactions into categories based on their principal characteristics (asset specificity, uncertainty, complexity, and frequency), and b) to evaluate the costs and consequences of alternative contracts, organizational structures and mechanisms available to govern those transactions. Table 3 attempts to do just that.

D. An Out-sourcing Risk Assessment Method

A thesis by Powell proposes a method for managers to assess the risks associated with a proposed out-sourcing action. Basically, aspects of the new relationship are related to a stoplight scheme. For example, if there is a high degree of asset specificity involved, there would be a red light in that category, and a higher degree of risk is indicated. Powell intended the light scheme to increase visibility of areas where management attention is important, and where managers ought to focus their risk-reduction efforts.

That application is certainly valid, but there's another wrinkle. The study of Transactions Cost Economics indicates that risk-reduction measures (even if highly effective) are not risk-elimination panaceas. Accordingly, one can expect an overall out-sourcing action with a large number of assessed red and yellow lights will be more costly and risky during its execution, even with due diligence in risk reduction.

What follows is a variation of Powell's stoplight scheme.

a. **Asset Specificity.**

RED. Source becomes specialized, with no close substitutes or competitors readily available. Example: only qualified supplier for a specific, highly-specialized task—such as suppliers of spare parts for aging weapon systems.

GREEN. Routine (non-specialized) goods or tasks; competitors or close substitutes readily available. Example: purchase of standard commercial items, such as paper clips and other office supplies.

b. **Complexity.**

RED. A large-scale task covering a large geographic area. Complexity of task severely limits qualified bidders. Example: large-scale, complex IT support; such as NMCI.

GREEN. A simple, routine task or standard product. A large number of qualified bidders. Example: office supplies.

c. **Length of Relationship.**

RED. A long-term relationship, which strains ability to foresee problems during original contract negotiations. Complexity and asset specificity exacerbate this problem. Example: IT support, such as NMCI.

GREEN. Out-sourcing is a one-time transaction, or can be structured as a series of one-time transactions. Example: purchase of office supplies.

d. **Frequency.**

RED. Specialized, complex task or service from which there is significant learning-by-doing. Incumbent contractor has significant competitive advantage over potential competitors. Example: contract maintenance for specialized aircraft, such as E-4s.

GREEN. Routine, standard task, service or product, in which a number of firms have significant expertise. Example: copy machine repair.

e. **Time Sensitivity.** (added)

RED. Quick performance of task or delivery of product is essential for satisfactory performance. Example: repair of combat aircraft, or warship subsystems.

GREEN. Quick delivery of products or accomplishment of task is not essential for satisfactory performance. Satisfactory performance can include some delays. Example: copy machine repairs.

f. **Operational Significance.** (added)

RED. Unsatisfactory performance significantly degrades operational capability or compromises safety. Example: repair of combat aircraft or warship subsystems.

GREEN. Unsatisfactory performance involves, at most, administrative inconvenience and longer time to accomplish routine tasks. No compromise of operational readiness or safety. Examples: delays in copy machine repairs and temporary lack of office supplies.

Table 3 provides a brief summary of the scheme above. Table 4 essays notional characterizations of three out-sourcing candidates.

TABLE 3. Assessing Like Nature of Transactions Costs

CHARACTERISTICS	DESCRIPTIONS		
	GREEN	YELLOW	RED
Market Structure: Supplier Power (post selection)	Many Suppliers		One Supplier
Nature of Tasks	Simple, general		Complex, specialized
Frequency of Tasks	Occasional		Continuous
Time Sensitivity: Implications of Late Performance	Inconvenience		Lost Operational Capability or Compromised Safety
Importance: Implications of Unsatisfactory Performance	Inconvenience		Lost Operational Capability or Compromised Safety
Asset Specificity	Little		Most

TABLE 4. Notional Assessments of Outsourcing Candidates

Characteristics			
	Office Supplies	Packing Parachutes	24/7 IT Service
Market Structure: Supplier Power (post selection)	GREEN: always a number of alternate suppliers	GREEN: little private expertise accrues to contractor	RED: highly specialized knowledge accrues to contractor
Nature of Tasks	GREEN: simple	RED: complex and specialized	RED: complex and highly specialized
Frequency of Tasks	GREEN: a series of one-time spot purchases	YELLOW: depends on training or operations cycles	RED: service required quite frequently
Time Sensitivity: Implications of Late Performance	GREEN: administrative inconvenience	RED: disrupts training or operations	RED: could significantly lessen operational capability
Importance: Implications of Unsatisfactory Performance	GREEN: administrative inconvenience	RED: compromise of safety and loss of operational capability	RED: loss of operational capability
Asset Specificity	GREEN: none	GREEN(?): little	RED: significant

5. CONCLUDING REMARKS: ONE SIZE DOES NOT FIT ALL

Transactions costs are not the only consideration for make-or-buy decisions. If that were so, then one might conclude the government should generally in-source production of complex weapon systems and out-source janitorial services. For good reasons, the opposite is the more typical practice.[29]

The goal of this paper was to integrate and apply key principles of TCE that previously focused on the firm as a guide to government out-sourcing. TCE recognizes organizations enter into bilateral contracts with suppliers, workers, managers, customers, firms, and other organizations that require costly governance (coordination and incentive) mechanisms. In evaluating transactions for their "make-or-buy?" decisions, firms typically consider both production costs and the cost of managing transactions, or transaction costs. It is time for government to do the same.

The implications of this paper suggest that in the case of out-sourcing a transaction where complexity, uncertainty and asset specificity can lead to renegotiation, the choice of

[29] However, advocates of the arsenal system could argue (and have) that the hazards illuminated by TCE indicate production of some complex weapon systems should be done internally.

governance structure will drive productive effort and unproductive bargaining. Ideally, contracts can be written that specify measures of performance, conflict resolution procedures, and conditions under which the contract can be modified, as well as provisions for sharing gains from transaction-specific investments. In reality, the tradeoff (as it applies to out-sourcing) might be stated as follows. On the one hand, efforts to suppress opportunism contractually are limited by the costs of writing and enforcing contractual agreements; they rise with the complexity, uncertainty, and asset-specificity associated with the transaction. This works against out-sourcing. On the other hand, while integration within the organization mitigates these problems, internal principal-agent issues arise that sacrifice the high-powered incentives of the market and consequently require greater monitoring and administrative costs. This works in favor of out-sourcing.

In summary, like private firms, government "make-or-buy?" decisions should look beyond production cost savings and forecast likely transaction costs associated with out-sourcing. Moreover, government rules that prescribe particular contract types should be based on the four principal characteristics of transactions (asset specificity, uncertainty, complexity and frequency), and should offer contracts and mechanisms that encourage productive effort, protect transaction-specific investments, and discourage unproductive bargaining, influence and rent-seeking activities.

Our central conclusion is indeed that one size does not fit all. This has interesting implications both at the management and policy level. Those managing competitive sourcing processes do well to keep in mind that not all A-76 competitions are the same. The costs (direct and indirect), risks, and associated management attention that attend out-sourcing vary greatly with the nature of the goods and services under consideration. Moreover, TCE tells a lot about the size of the transactions costs and risks associated with out-sourcing. One implication affects the conduct of the A-76 competition. Out-sourcing decisions that involve a lot of red and yellow lights (in Table 3) warrant more management attention up front. In particular, managers should invest more in formulating Performance Work Statements and in drawing up the contract(s) which govern the relationship to include provisions for dispute resolution and contract renegotiation. Avoiding large costs and management headaches later is worth some extra resources and management attention early on. Moreover, both defense managers and contracting officers should vary contract types with the assessed nature of the out-sourcing action. Thus, for example, purchase of standard office supplies are handled nicely with very simple, fixed-price contracts—while long-term IT services contracts entail much more complete and complex contracts with appropriate incentive and governance provisions.

We should also recognize that one size does not fit all at the policy level,. In a very real sense, the A-76 criteria include transaction-cost considerations because the out-sourcing proposal must beat the in-house proportion by a certain margin in order to get the contract. However, as TCE amply demonstrates, the likely size of transactions costs varies greatly. Moreover, those costs vary in an orderly fashion with respect to certain key characteristics we've discussed above. It's time to take this pattern into account. The winning margin should vary according to the nature of the out-sourcing relationship being considered—more than the current A-76 standard for some, less for others.

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APPENDIX

RELATION-SPECIFIC INVESTMENT AND POTENTIAL FOR HOLDUP: A HYPOTHETICAL EXAMPLE[30]

Boutique Motor Corporation (BMC) features highly decorative cup holders in its automobiles. General-purpose plastics suppliers can provide those unique cup holders for $4 per unit. BMC, however, forms a long-term relationship with Mom & Pop Plastic Fabricators (M&P) to get those cup holders at a cheaper price, say $3 per unit for 500,000 cup holders per year. As part of its part of the relationship, M&P modifies (and specializes) its plastic molding machinery to make the distinctive BMC cup holder more efficiently. M&P invests $1 million in the modifications, and can then produce each unit for $1 each.[31] M&P's modified plant can still produce general-purpose cup holders, but average variable cost goes up to $2.90 per unit with the special-purpose machinery. The prevailing market price for general-purpose cup holders is $3 per unit.

In this simple example, M&P's costs are as follows:

Total Cost = $140,000 + $1 * Q,

where *Q* is annual production (500,000 for BMC), and annual payments of $140K will retire a debt of $1 million at 6.64% (APR) over ten years. If M&P produces only for BMC, then total cost is $640,000. Revenues from BMC are $1.5 million (500,000*3).

Thus, M&P earns profits of $0.86 million per year as a result of the relationship with BMC; it would absorb losses of 90K per year if it diverted its production capacity to 500,000 general-purpose cup holders.[32] Likewise, BMC adds $0.5 million to its profits since it pays $3 per unit for its cup holders, instead of $4 (500,000*[4-3]). In short, the agreement provides significant benefits to both parties. The total benefit (or "surplus") is $1.45 million (.86+.09+.50) after the relationship between the two companies is formed.

However, this total surplus can be contested. Suppose BMC demands M&P lower its price to $2. If that happens, then M&P's profits decrease to $0.36 million (500,000*2 – 640,000), and BMC's profits increase by $0.5 million. At the same time, M&P may insist on a

[30] Besanko (2000) has a similar example on page 153.

[31] Marginal Cost = Average Variable Cost = $1.

[32] Before making its relationship-specific investment (or prior to the transformation), M&P reckons its advantage as $0.86 million per year minus its profits as a general-purpose supplier. After the investment, M&P's benefit from the relationship with BMC is $.95 million per year with production of 500,000 per year. (If M&P were to produce those cup holders at variable costs of $2.90 per unit and sell them at $3.00, it would incur a loss of $90K per year [revenue = $1.50 million; cost = $1.59 million]).

price increase to $3.50 per unit. If that happens, then M&P's profit increases to $1.11 million and BMCs benefit declines to $0.25 million.[33] In short, BMC and M&P can dispute shares of the total benefit from the relationship.[34] As indicated, the standard term for such attempts to alter the relationship is "holdup."

[33] It's unlikely that a holdup by either party would be presented this crudely. BMC might plead hard times and assert the need to negotiate lower prices from suppliers. M&P might point to increases in input costs, and assert the need for a higher price in order to remain in its relationship with BMC.

[34] There are obvious limits to this behavior. If M&P demands more than $4 for each cup holder, then BMC would find it advantageous to buy its cup holders from other sources (at $4). Likewise, if BMC forces the price below $1.10, then M&P would choose to make general purpose cup holders and sell them for $3 per unit (at a unit cost of $2.90).

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